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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/638,232	08/07/2003	Raymond Browning	M-15233US	5981
7590 GALLAGHER & LATHROP Suite 1111 601 California Street San Francisco, CA 94108-2805		04/06/2007	EXAMINER LEE, PING	
			ART UNIT 2615	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/06/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/638,232	BROWNING ET AL.
	Examiner	Art Unit
	Ping Lee	2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 June 2006.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-31 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date: _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 4/26/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information listed but without providing a copy has not been considered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Padi (US005197104A).

Regarding claims 1, 13 and 14, Padi discloses a process for estimating the position of a coil (the displacement of the diaphragm is directly related to the position of the coil) relative to an associated magnetic structure, the method comprising:

coupling a reference impedance (260) in series with the coil (250);

applying to the coil and the reference impedance an alternating current signal

(10);

measuring a resulting voltage across the reference impedance or the coil (282); estimating a value of an impedance of the coil via a circuit model; and utilizing the estimated impedance value to derive an estimate of coil position relative to the associated magnetic structure.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-8, 10, 11, 13, 15-23, 25, 26 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagi (US 4,908,870) in view of Miller (US 3,937,887).

Regarding claims 1, 2, 5, 7, 8, 11, 13, 15, 19, 21-23, 26 and 28-30, Nagi discloses a process comprising:

- coupling a reference impedance (R_s) in series with the coil (Z_{10});
- applying to the coil and the reference impedance an alternating current signal (Vi);
- measuring a resulting voltage across the reference impedance or the coil (V_s);
- estimating a value of an impedance of the coil via a circuit model (col. 5, lines 36-43).

Nagi fails to explicitly disclose that the estimated impedance value could be used to derive an estimate of coil position relative to the associated magnetic structure. Nagi's speaker is a dynamic speaker. Although not explicitly shown, it includes magnetic structure. Miller teaches that the impedance of the speaker is directly related to the instantaneous diaphragm or cone position of the speaker. This clearly implies that the impedance value is also related to the coil position relative to the associated magnetic structure since the coil and the diaphragm moving in the same motion. Thus, it would have been obvious to one of ordinary skill in the art with Nagi and Miller in front of him/her to derive the estimate of coil position relative to the associated magnetic structure using the estimated impedance value in order to linearize the speaker performance.

Regarding claims 3, 17 although not explicitly discuss the nature of the source (Vi), one skilled in the art would have recognized that Nagi's system would work equally

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well with any audio signal, including signal with constant amplitude to produce audio signal with constant level.

Regarding claims 4, 6, 10, 18, 20, 25 and 31, although not explicitly discuss the nature of the source (Vi), one skilled in the art would have recognized that Nagi's system would work equally well with any audio signal, including signal with constant frequency.

Regarding claim 16, Nagi fails to show the impedance (Rs) is a resistor and another coil. The purpose of having the impedance (Rs) as taught in Nagi is to measure the voltage (current) across the impedance. The impedance element, could be any electronic device having known impedance value, including resistor and a coil. Thus, it would have been obvious to one of ordinary skill in the art to modify Nagi to use other well known resistance element, including a resistor and a coil, as the Rs in order to measure the voltage across it.

7. Claims 12 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagi and Miller as applied to claims 5, 8, 19 and 22 above, and further in view of Jones et al (hereafter Jones) ("Electronic Instruments and Measurements").

Regarding claims 12 and 27, Nagi fails to show a bridge detector. Jones teaches that a bridge amplifier, uses a few electronic elements, could be used to measure unknown impedance. Since Nagi's system is to determine the impedance of the coil, a bridge detector as taught in Jones could be used to perform this function. Thus, it would have been obvious to one of ordinary skill in the art to modify Nagi and Miller by

using bridge detector as taught in Jones to determine the impedance of the coil in order to compensate the speaker performance.

8. Claims 5, 8, 9, 19 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saville (US 3,872,247) in view of Miller (US 3,937,887).

Regarding claims 5, 8, 9, 19 and 24, Saville discloses a process comprising:

coupling a reference impedance (39) in series with the coil (37);

applying to the coil and the reference impedance an alternating current signal

(12);

measuring a resulting voltage across the reference impedance or the coil (41, 42);

estimating a value of an impedance of the coil via a circuit model (as discussed in the abstract, the purpose is to linearize the impedance of the speaker, so the detector circuit inherently estimate the value of the impedance of the coil).

Saville fails to explicitly discloses that the estimated impedance value could be used to derive an estimate of coil position relative to the associated magnetic structure.

Saville's speaker is a dynamic speaker. Although not explicitly shown, it includes magnetic structure. Miller teaches that the impedance of the speaker is directly related to the instantaneous diaphragm or cone position of the speaker. This clearly implies that the impedance value is also related to the coil position relative to the associated magnetic structure since the coil and the diaphragm moving in the same motion. Thus, it would have been obvious to one of ordinary skill in the art with Saville and Miller in front of him/her to derive the estimate of coil position relative to the associated magnetic

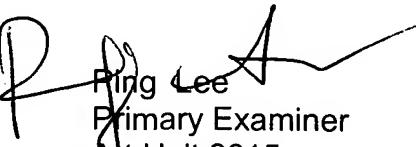
structure using the estimated impedance value in order to linearize the speaker performance.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522.

The examiner can normally be reached on Monday, Wednesday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ping Lee
Primary Examiner
Art Unit 2615

pwl